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### **Click-East: Using data collected within a therapeutic iPad app to elucidate results of a randomised controlled trial**

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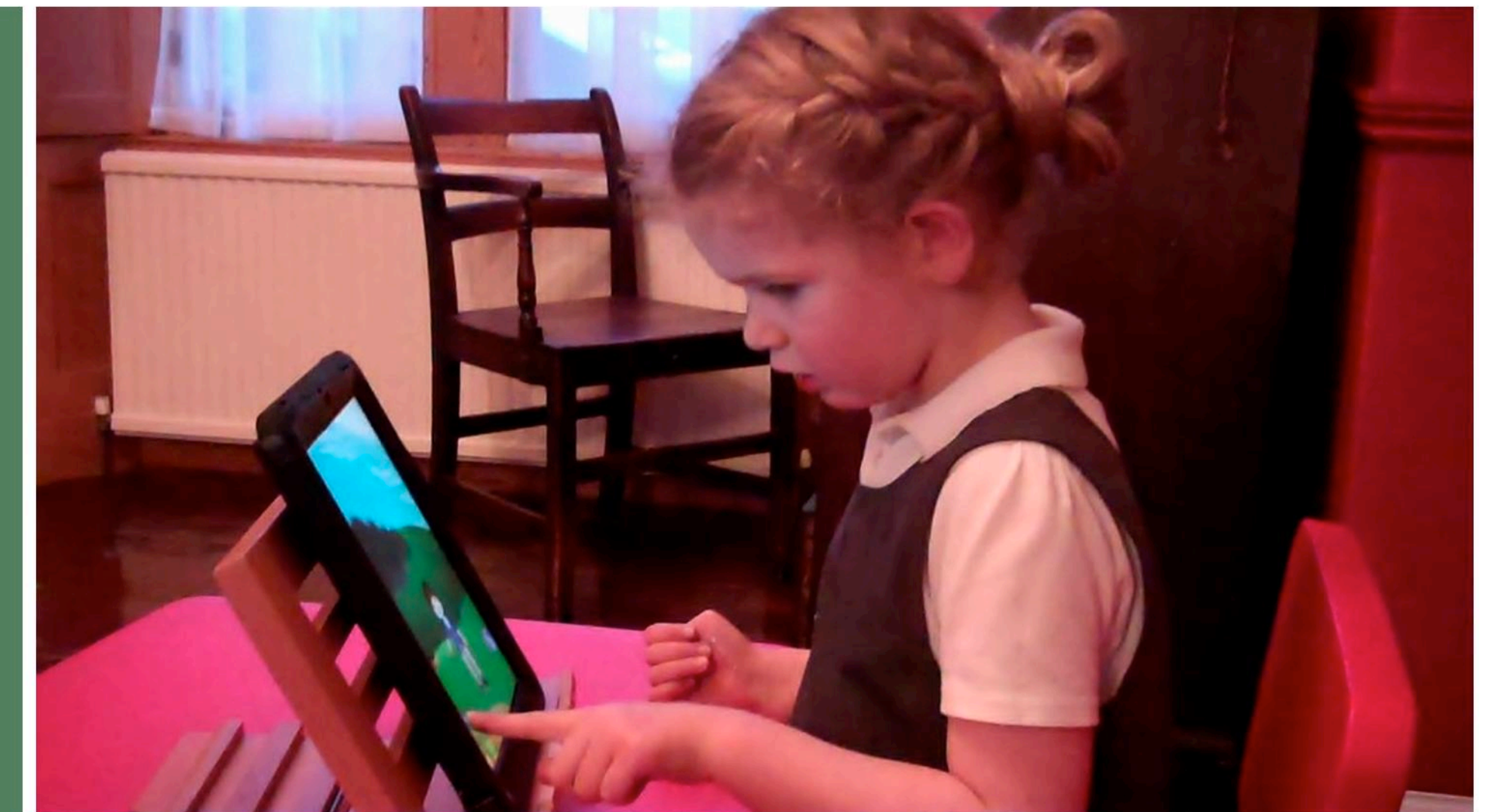


# Click-East: Using data Collected within a Therapeutic iPad app to Elucidate Results of a Randomised Controlled Trial

Helen Pain, Sue Fletcher-Watson, Anne O'Hare, Helen McConachie

## Background

- Children with autism can struggle to attend to social information and to use social cues - this affects their ability to learn, especially from people<sup>1</sup>
- Children with autism often show a strong preference and facility for using technology, including computer games<sup>2,3</sup>
- There is a widely-held assumption that early intervention has the greatest potential to benefit children with autism<sup>4</sup>
- FindMe is a specially-designed iPad app, targeting social skills development and accessible to very young children
- A recent RCT of the app (n=54) produced no group-level effects on real world social and communication skills. However a sub-set of participants may have shown a treatment benefit
- Here we investigate the utility of detailed in-app data collected on game play to elucidate possible intervention effects



## The App, FindMe



**Figure 1:**  
Top row: images from part 1 of the app, which rehearses the skill of prioritising people for attention  
Middle row: images from part 2 of the app, which rehearses the skill of following social cues  
Bottom row: images from the rewards embedded in the app  
The app was created using a participatory design framework and then developed with extensive user testing

## The Trial, Click-East

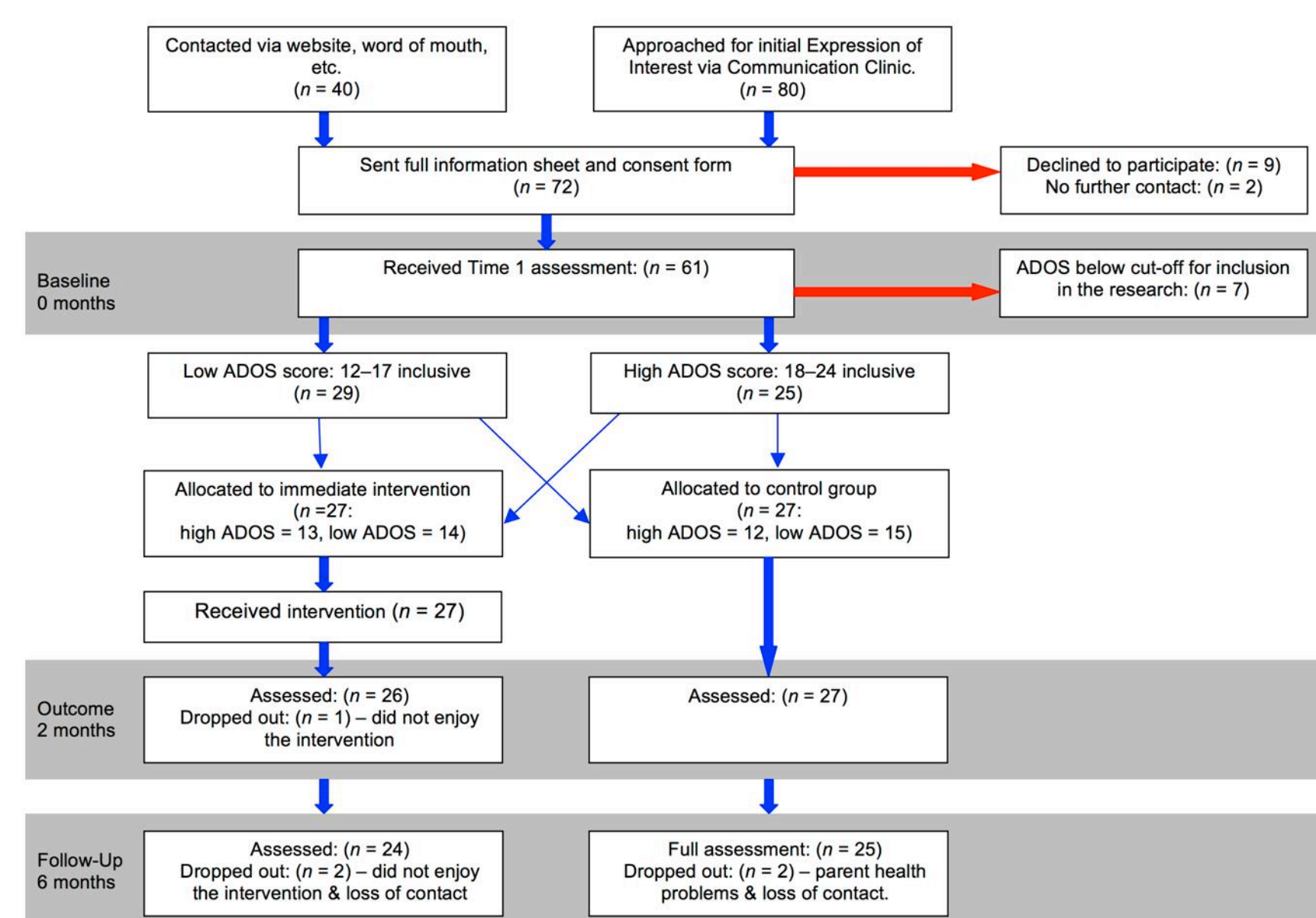


Fig 2: CONSORT diagram showing the RCT process

## RCT results

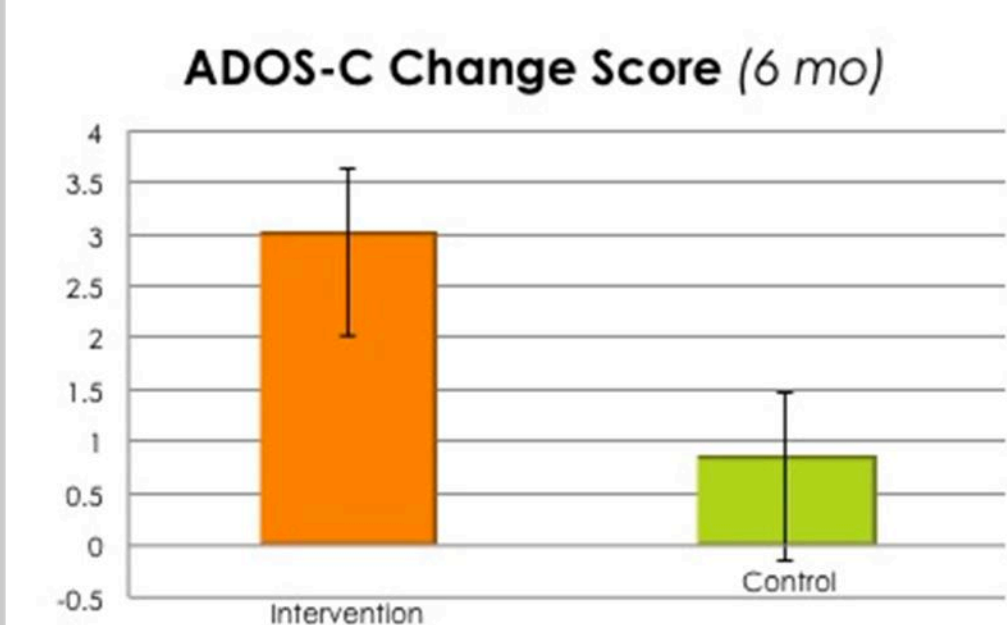


Fig 3: Group mean change scores on primary outcome  
 $t(47) = .975, p = .335, d = .028$

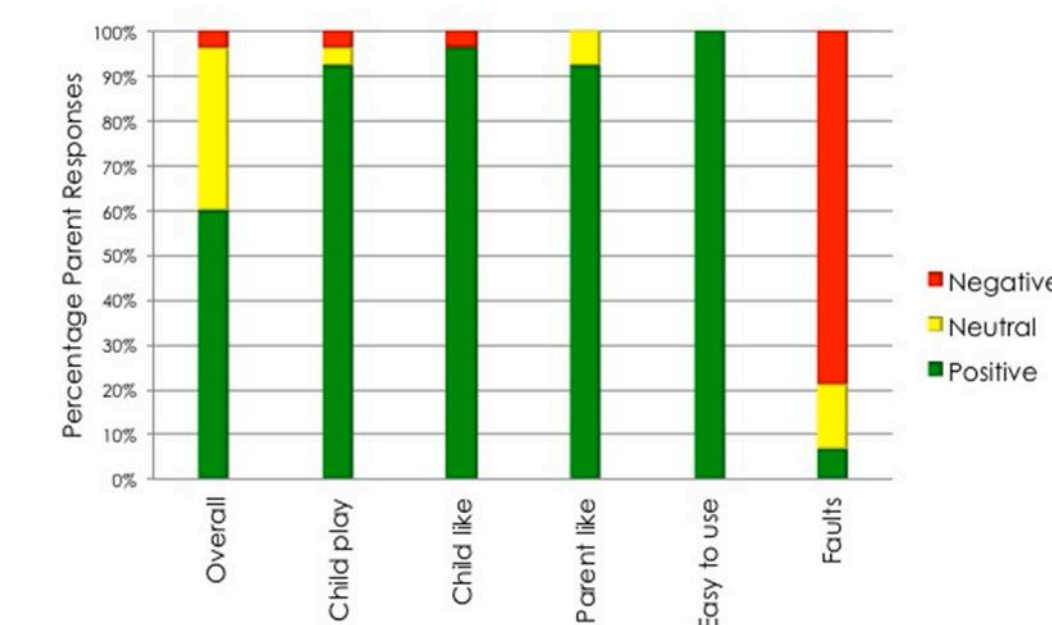


Fig 4: Parent attitudes to the intervention

	Intervention n=27	Waitlist n=27
Age (months)	49	50
Gender (% male)	78%	82%
Maternal education: % Uni or above	41%	40%
SIMD, bottom quintile	15%	18%
SIMD, top quintile	39%	30%
Mullen VR age equivalent (months)	30	31
Mullen FM age equivalent (months)	31	27
ADOS-2 comparison score	7.74	7.26
MCIDI words used	142	123
CSBS social communication sub-scale	24	25

Table 1: Group characteristics at baseline

## In-App Data

### Whole group data (n=41 including waitlist controls)

- Mean date span of intervention = 58 days
- Mean number of days with play = 25 days
- Mean sessions of play per day = 1.6
- Mean play time = 11hrs, or approx 26 mins on play days.
- Percentage reaching highest level = 74%
- Children showed consistency in response time to trials but three distinct patterns of change in play time (Fig. 6 & 7)

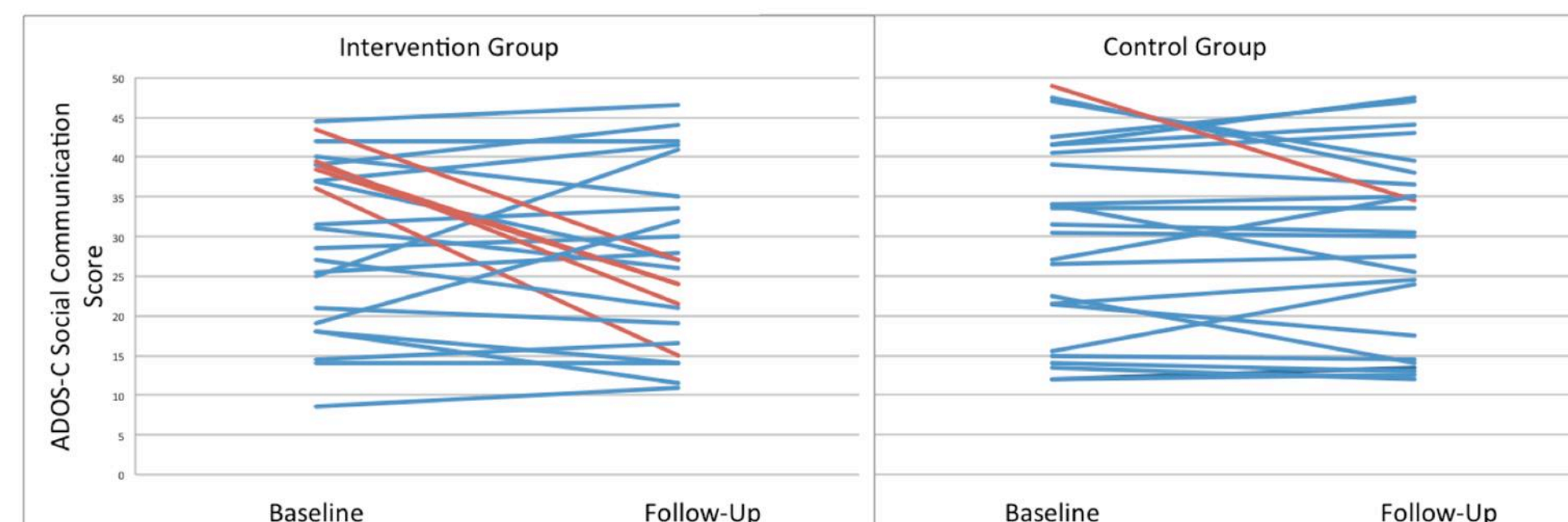
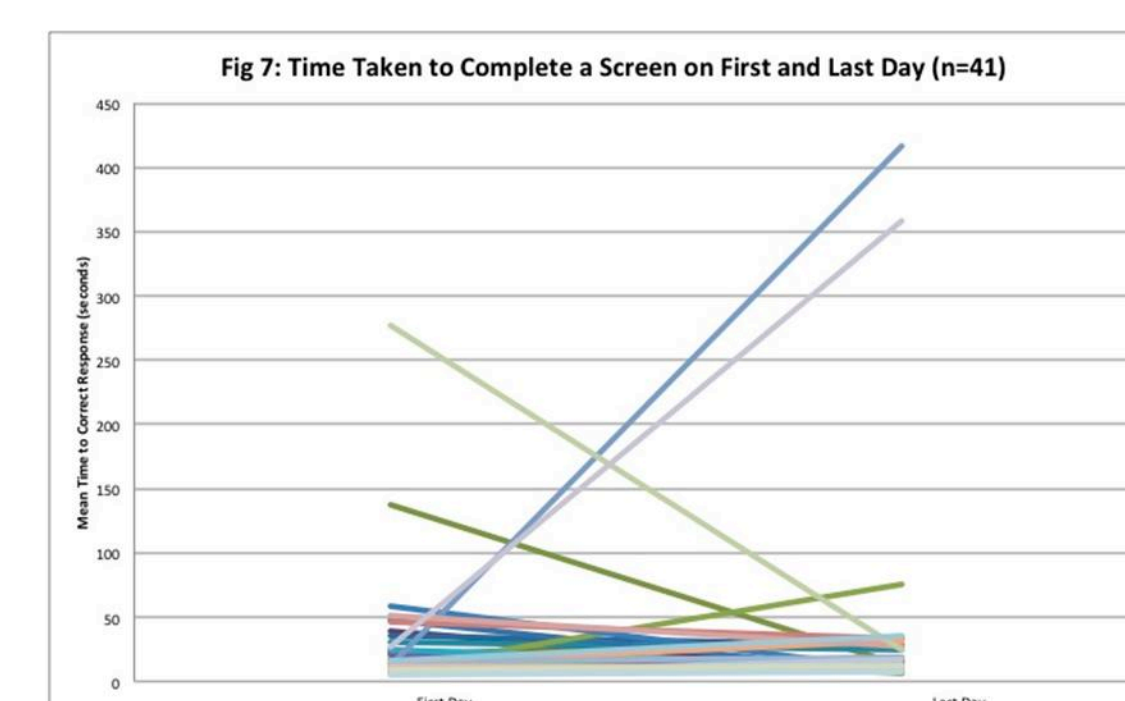
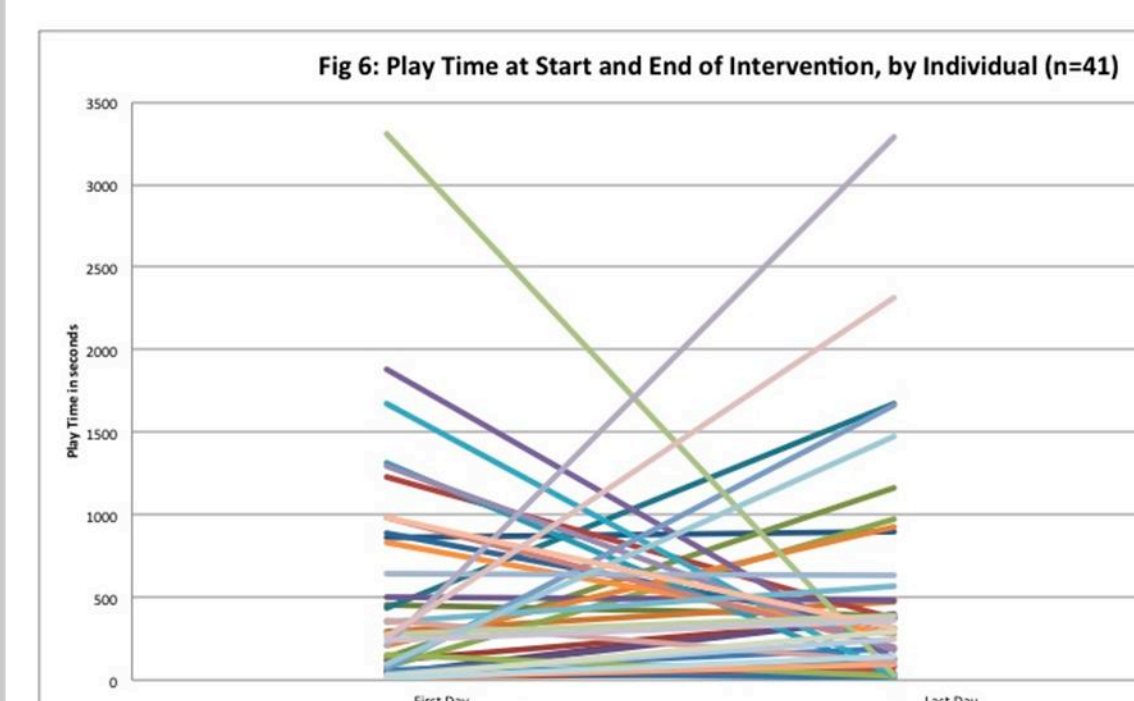
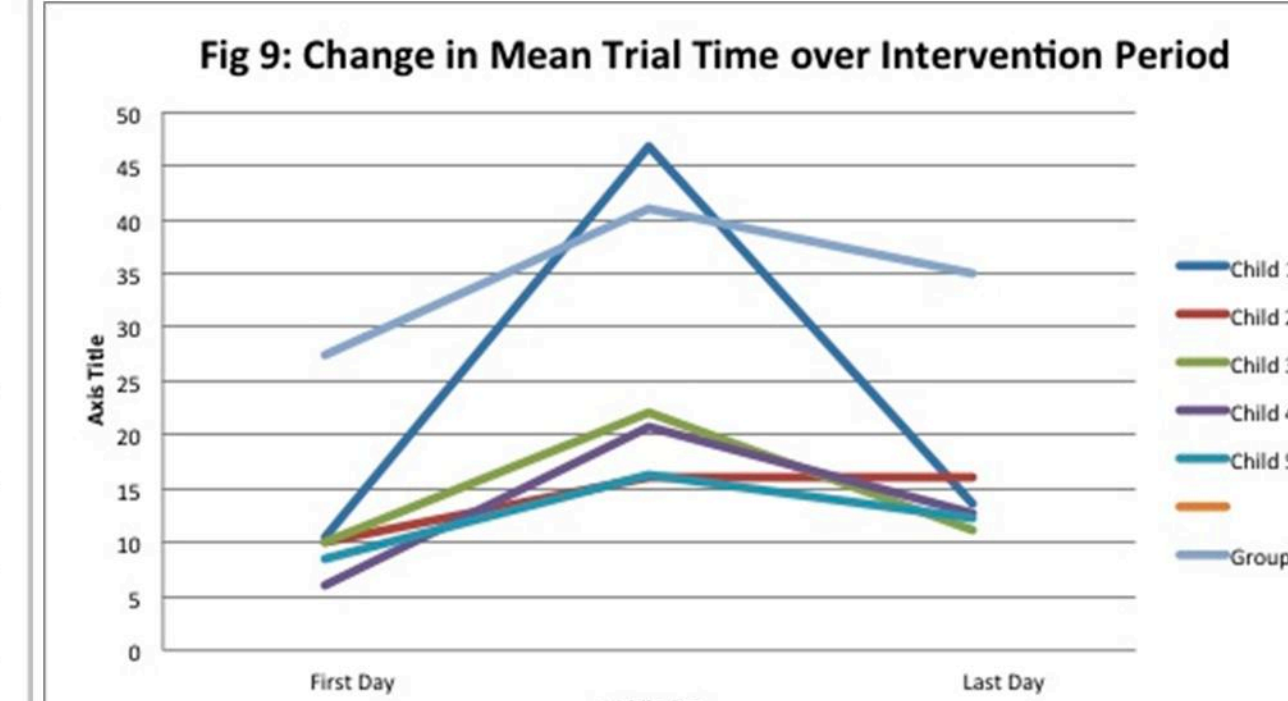
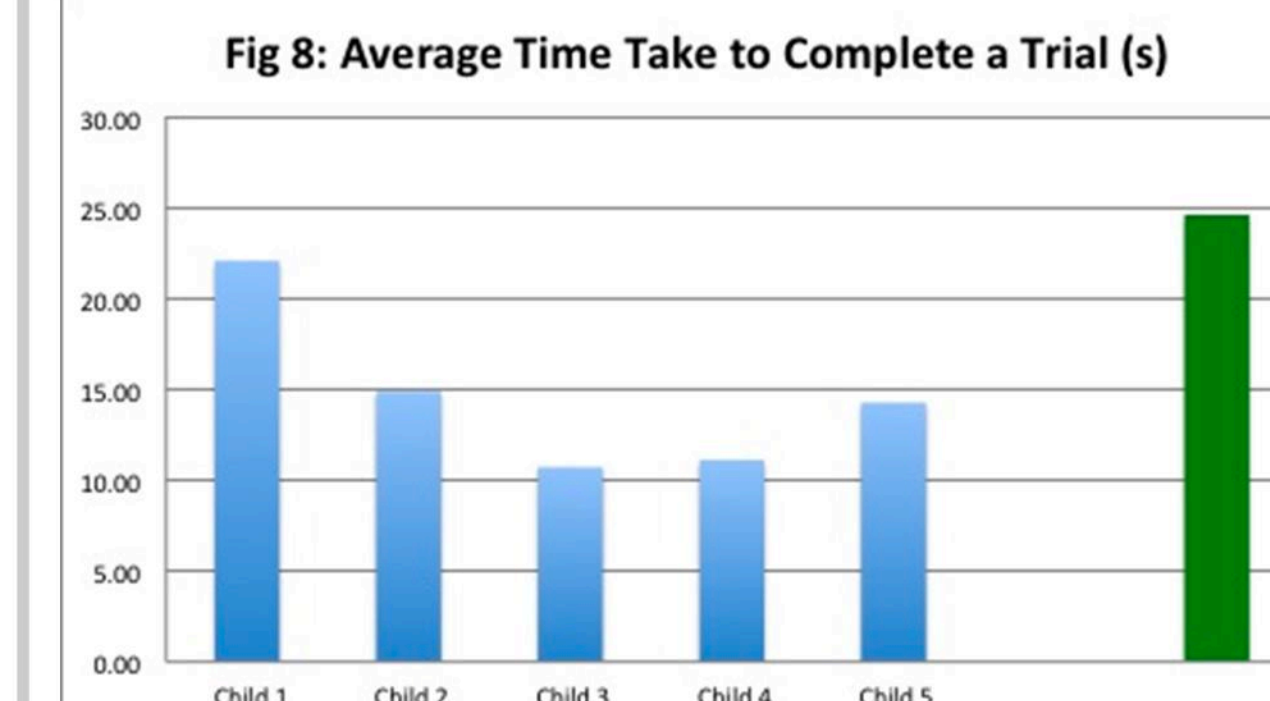


Fig 5: Individual change scores on primary outcome: children demonstrating reliable change are shown in red

- Groups were well matched at baseline (see Table 1 on the left)
- There was no group level intervention effect on primary outcome, a measure of social communication in parent-child play
- No group effects were found on other outcomes including parent-report social communication skills, vocabulary and ADOS
- Parent attitudes to the intervention were positive
- A sub-set of children in the intervention group (n=5) showed reliable change

### Comparing 'Intervention Responders' with group data

- Children who showed reliable change had consistently poor joint attention scores (ADOS) and high ADOS-C scores at Baseline
- Children showing reliable change seem to be quicker at completing each intervention trial than the group average
- However their 'learning profile' across the intervention period follows a fairly typical trajectory. This is interpreted as an increase in exploratory play followed by an increase in accuracy.



### Conflict of Interest:

Authors HP, SFW and HM declare that they may receive royalties in the future if the FindMe app paid downloads exceed a certain threshold.

FindMe is also available in a free, reduced-content version via iTunes

With thanks to all our participating families and experts and our funder, the Nuffield Foundation

